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| APPLICATION NO.   | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO.   | CONFIRMATION NO. |
|---|-------------|----------------------|-----------------------|------------------|
| 10/662,992  | 09/15/2003  | F. Conrad Greer      | 50715/P004US/10311738 | 2249             |
| 29053   | 7590        | 02/07/2007           | EXAMINER              |                  |
| DALLAS OFFICE OF FULBRIGHT & JAWORSKI L.L.P.<br>2200 ROSS AVENUE<br>SUITE 2800<br>DALLAS, TX 75201-2784 |             |                      | NGUYEN, NGOC YEN M    |                  |
|   |             | ART UNIT             | PAPER NUMBER          | 1754             |
| SHORTENED STATUTORY PERIOD OF RESPONSE  |             | MAIL DATE            | DELIVERY MODE         |                  |
| 3 MONTHS  |             | 02/07/2007           | PAPER                 |                  |

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

|                              |                        |                     |  |
|------------------------------|------------------------|---------------------|--|
| <b>Office Action Summary</b> | <b>Application No.</b> | <b>Applicant(s)</b> |  |
|                              | 10/662,992             | GREER ET AL.        |  |
|                              | <b>Examiner</b>        | <b>Art Unit</b>     |  |
|                              | Ngoc-Yen M. Nguyen     | 1754                |  |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 13 November 2006.
- 2a) This action is FINAL.                    2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1-34 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 1-34 is/are rejected.
- 7) Claim(s) \_\_\_\_\_ is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All    b) Some \* c) None of:
  1. Certified copies of the priority documents have been received.
  2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- 1) Notice of References Cited (PTO-892)
- 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) Notice of Informal Patent Application
- 6) Other: \_\_\_\_\_

**DETAILED ACTION**

Applicant's election with traverse of iron species in the reply filed on November 13, 2006 is acknowledged. The traversal is on the ground(s) that if there are species to claim 1 based on the selection of metal, the species should consist of the metal groups and not individual metals. This is not found persuasive because "the transition group metals" as elected by Applicants would include more than half of all the metals in the Periodic Table of Elements, which would be a serious burden on the examiner if restriction is not required. If Applicants insist that the species are not patentably distinct, Applicants should submit evidence or identify such evidence now of record showing the species to be obvious variants or clearly admit on the record that this is the case. In either instance, if the examiner finds one of the inventions unpatentable over the prior art, the evidence or admission may be used in a rejection under 103(a) for the other invention.

The requirement is still deemed proper and is therefore made FINAL.

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1-30 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter

which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

In claim 1, the step of “preheat” the anhydrous metal is required, however, as disclosed in the instant specification, only when the reaction between the anhydrous metal and the anhydrous HF acid is endothermic, the temperature of the reaction is desired to be high, i.e., the anhydrous metal is desired to be preheated (note paragraph [0006]). When the reaction is exothermic, the reaction temperature should be low (note paragraph [0007]). Since claim 1 is generic to include metals that would react with HF acid either endothermically or exothermically, there is no sufficient support for the preheating step for the metal which would react exothermically with the HF acid.

In claim 1, the anhydrous metal is preheated to a “predetermined reaction temperature”, however, the reaction temperature is dependent on the temperature of the anhydrous hydrofluoric acid, i.e., if only the metal is preheated, and when it is added to the HF acid, the combined temperature, which would be the initial temperature for the reaction, would be lower the temperature of the “preheated” metal, thus, the “preheated” metal could not be at the same temperature as the “reaction temperature”. Furthermore, the reaction is either endothermic or exothermic and the “reaction temperature” would decrease or increase throughout the reaction. It is unclear to which temperature the “preheated” metal is required to be preheated to.

Where applicant acts as his or her own lexicographer to specifically define a term of a claim contrary to its ordinary meaning, the written description must clearly redefine the claim term and set forth the uncommon definition so as to put one reasonably skilled in the art on notice that the applicant intended to so redefine that claim term. *Process Control Corp. v. HydReclaim Corp.*, 190 F.3d 1350, 1357, 52 USPQ2d 1029, 1033 (Fed. Cir. 1999). The term "metal" in claim 1 is used by the claim to mean "metal compound" (note claim 3), while the accepted meaning is *pure* "metal" or possibly a metal alloy. The term is indefinite because the specification does not clearly redefine the term.

Claims 25, 27-30 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form.

In the independent claim 1, the following limitations are positively required, mixing, anhydrous metal, anhydrous hydrofluoric acid, a predetermined reaction temperature, however, in the dependent claims 25, 26-30, they require that there are no mixing, the metal and hydrofluoric acid are not anhydrous, the temperature is different than the predetermined reaction temperature.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

- (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wojtowicz et al (4,034,070) in view of Mahmood et al (4,938,945), optionally in view of Zuzich et al (5,286,882).

Wojtowicz '070 discloses a process for preparing anhydrous metal which comprises reacting, in the presence of a nitrile having 2-4 carbon atoms, a metal with HF and halogen, both in substantially anhydrous form, said halogen being selected from the group consisting of chlorine, bromine, iodide and a mixture thereof, the reaction being carried out using, per every gram-equivalent of metal, about 0.1-50 gram-moles (i.e. moles) of HF and about 0.025-25 gram-moles of halogen (note claim 1). Thus, for every gram of metal,  $(0.1-50) * (\text{MW of HF} = 20)$  or 2-1000 g of HF are used. This range overlaps the claimed range. With respect to the encompassing and overlapping ranges previously discussed, the subject matter as a whole would have been obvious to one of ordinary skill in the art at the time of invention to select the portion of the prior art's range which is within the range of the applicants' claims because it has been held *prima facie* case of obviousness to select a value in a known range by optimization for the results. *In re Boesch*, 205 USPQ 215. Additionally, the subject matter as a whole would have been obvious to one of ordinary skill in the art at the time invention was made to have selected the overlapping portion of the range disclosed by the reference because overlapping ranges have been held to be a *prima facie* case of obviousness. *In re Malagari*, 182 USPQ 549.

The metal reactant can be any one which will react with HF and halogen to form metal fluoride, for example iron among others (note column 1, lines 32-41).

Any convenient order of mixing the reactants and the nitrile may be employed. The HF and the nitrile may initially be mixed together, then the metal may be added followed by the bubbling in the halogen, or the halogen may be added to the HF-nitrile mixture followed by the final addition of the metal (note column 2, lines 25-32).

Wojtowicz '070 further discloses that the reaction can be effected at any suitable temperature, no that there is no criticality with respect to the temperature necessary to bring out reaction (note column 2, lines 32-46). Neither is there any criticality in the pressure used to effect the reaction. When elevated pressure is employed, means should be provided to vent off by-product HCl (note column 2, lines 47-54).

After the reactants and the nitrile are mixed together, the reaction usually proceeds spontaneously and quite rapidly. The resulting product mixture, containing the metal fluoride, is usually a stable mixture. It therefore can be stored as such, if desired, until such time as the recovery or separation of the metal fluoride is desired (note column 2, lines 60-66). Separation and recovery of the metal fluoride from the reaction product mixture can be achieved using any satisfactory, convention technique. The ultimate product purity to be attained is usually a matter of choice depending on the intended field of utility (note paragraph bridging columns 2-3).

For the apparatus limitations in the dependent claims, it is well settled that patentability of method claims cannot be predicated on apparatus limitations, In re Tarczy-Hornoch, 158 USPQ 141, 150 (CCPA 1968).

The differences are Wojtowicz '070 does not specifically disclose the step of preheating the anhydrous metal or the step of adding the anhydrous metal in steps.

Mahmood '945 discloses a process for producing anhydrous ferric fluoride according the endothermic reaction between ferric chloride and HF (note claim 1). Since the process is endothermic, the reaction temperature may be subjected to cooling below critical, which results in slow-down or even cessation of the reaction (note column 4, lines 20-26). Mahmood '945 also teaches that heat can be supplied to the reaction (note column 3, lines 23-26). It is also known in the art that the higher the temperature, the faster the reaction rate.

Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to supply heat to the reaction of Wojtowicz '070, as suggested by Mahmood '945 in order to accelerate the reaction rate and to prevent slow-down of the reaction due to the endothermic reaction between the iron and the HF acid. Without a showing of criticality or unexpected results, it is well within the skill of the artisan to supply the heat to either preheat either of the reactants or both or heat the combined reactants, as long as the optimum reaction temperature can be attained.

Mahmood '945 also teaches that means for agitating the reaction mass may be provided to ensure physical contact between the reactants (note column 3, lines 29-34 and column 4, lines 65-68). Mahmood '945 can be applied to teach that ferric chloride can be used instead of the iron and chlorine.

For the rate of adding the metal to the HF acid, because the reaction between metal and the HF acid can be endothermic or exothermic, it would have been obvious to

control the amount of the metal being added to HF acid in order to control the reaction temperature. As disclosed in Mahmood '945, HF acid is added to the metal compound and the amount of HF acid being added is controlled in order to maintain the desired reaction temperature.

Optionally, Zuzich '882 can be applied to teach that the reaction temperature in an exothermic reaction can be controlled by slowly adding the reactant (note column 13, lines 1-5). Such teaching would be equally applied for an endothermic reaction because by slowly adding the reactant, the drop in the temperature due to the endothermic reaction would be more gradual and it would be easier to compensate to the temperature loss.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ngoc-Yen M. Nguyen whose telephone number is (571) 272-1356. The examiner is currently on a on Part time schedule.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stanley Silverman can be reached on (571) 272-1358. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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Art Unit 1754

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February 5, 2007